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Gilligan et al.

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[54] MOUSE AND METHOD FOR CONCURRENT CURSOR POSITION AND SCROLLING CONTROL

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[56] References Cited

U.S. PATENT DOCUMENTS

3,310,768	3/1967	Opalenik	338/167
3,541,541	11/1970	Engelbart .	
4,301,345	11/1981	Balta	250/229
4,364,035	12/1982	Kirsch .	
4,546,347	10/1985	Kirsch .	
4,552,360	11/1985	Bromley	273/85 G
4,698,616	10/1987	Krohn	250/231.13
4,786,895	11/1988	Castaneda	340/709
4,866,602	9/1989	Hall .	
4,891,632	1/1990	Chang	340/710
4,897,629	1/1990	Lecklider	338/114
4,994,795	2/1991	MacKenzie	340/710
5,063,289	11/1991	Jasinski et al. .	
5,095,302	10/1992	McLean et al. .	
5,095,303	5/1992	Clark	340/709
5,122,785	6/1992	Cooper .	
5,132,672	7/1992	Clark .	

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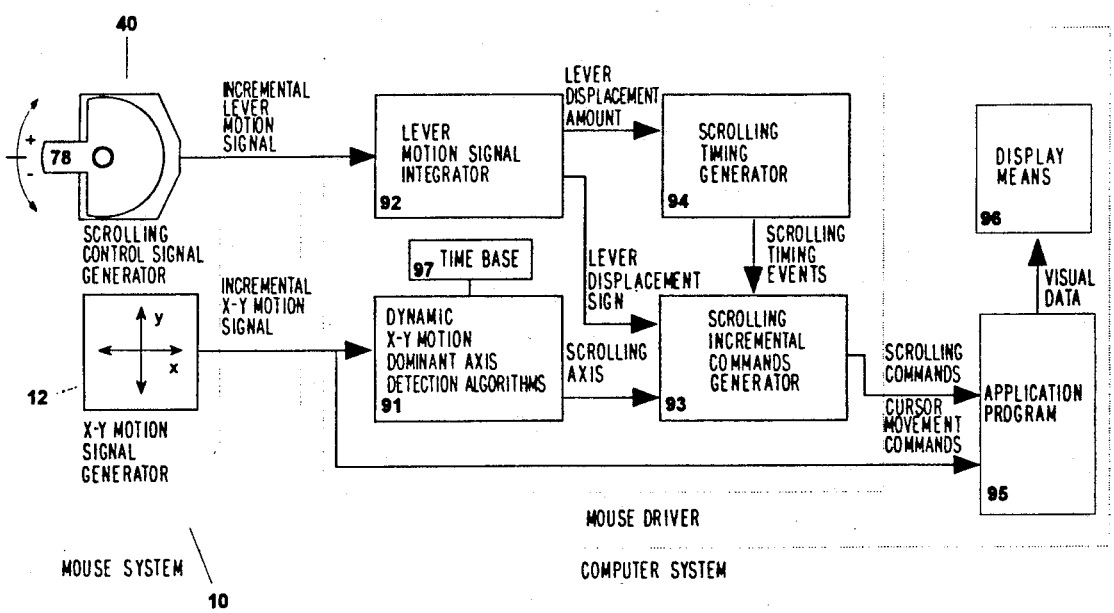
[57] ABSTRACT

In a manual input device for controlling a cursor on a computer display (e.g., a mouse), a supplementary proportional control device including a spring-loaded lever displaceable from an equilibrium position in either of two directions and protruding out of the mouse housing is provided for concurrently controlling the scrolling operation. The supplementary control signal is generated in response to operation of a lever designed to be driven by the thumb of the same hand which holds the mouse. The control signal varies according to the displacement amount of the lever from its equilibrium position and the displacement direction and thus is used as a scrolling rate and direction control. An associated method is provided for setting the scrolling direction in correspondence to the dominant axis of the cursor's trail. Detecting an approximately circular movement of the cursor sets the scrolling axis perpendicular to the screen plane (i.e., in a third dimension).

17 Claims, 9 Drawing Sheets